

Beta-Carotene from a Dairyman's Perspective

Doug Hubby, DSM Nutritional Products, Dairy Specialist North America

Victus Transition

- Blend of antioxidants—contains Beta-carotene and mixed tocopherols (vitamin E sources).
 - Specific Beta-carotene requirement and responses
 - Vitamin A is stored and regulated in the liver whereas Beta-carotene is not
 - At current vitamin A prices, cost spread per million IU's is 15:1; in the past has been > 50:1

A blend of specific antioxidants, balanced for transition cows and in a convenient package. Victus Transition contains a blend of Beta-carotene and mixed tocopherols, which provides needed pro-vitamin A and antioxidants. Mixed tocopherols are a family of vitamin E compounds naturally found in vegetable oils, nuts, fish, and leafy green vegetables. Together, these provide a mixture of d-alpha, beta, gamma, and delta tocopherol—all potent sources of vitamin E activity. Mixed tocopherols are used widely in foods to protect fats, oils, and cereals from harmful oxidation, and they are used in Victus Transition to help protect the product during storage and also to provide the cow with an antioxidant system balanced for her unique needs during the challenging transition period.

Victus Transition is supported by the innovative iCheck process to assess herd and individual cow status and to provide a strategic, cost-effective solution. Not all herds and cows are the same, and DSM uses iCheck to audit and meet your specific needs.

When used at the recommended rates, Victus Transition helps support stronger heats, improved colostrum quality, and serves as a pro-vitamin A source for follicular health and reproductive benefits. Economic returns depend on herd status and repro protocols, but usually exceed \$3 for every \$1 invested. Individual responses can be evaluated with a Victus Transition audit and accompanying calculator using your herd's specific conditions.

Measurements/Observations

Heat signs (especially if earlier than the 60d VWP)

AvDIM, % Preg by 150 DIM, 21-d Pregnancy Rates, 0-40 d milk productions

Immune events (mastitis, metritis, RP's, etc)

iCheck BC blood measurements (expect more cows > 3.0 ug/ml while on BC ; up to 2 ug/ml through 40-50 days in milk)

Aborts, other BREDSUM comparisons

Colostrum Quality Measurements- MSU and Brix.

Recommended Programs

Far-off Dry cows: feed 7 gm (1/4 oz) of Victus Transition per head per day to provide 400 mg of Beta-carotene and antioxidant system.

Close-ups (last 21 days of the dry period)—if cows haven't received Victus Transition for the entire dry period, a special closeup program can be designed from an ICheck herd audit. Usually somewhat higher levels will be needed for a 21-day program.

Close-ups plus Fresh: 7 gm (1/4 oz) per head per day for at least 3 weeks prior to 3 weeks post-calving

Survey: US Colostrum Practices

Species: Dairy

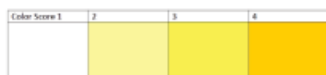
Country: US

Objectives

- Determine current quality of US colostrum
- Determine value of iCheck®, Total Protein (T Pr) and BRIX (refractive index) measurement tools

Trial details

- 25 dairy herds in midwestern US, 3000 cows
- Measured: colostrum (color, BRIX), calf T Pr, dry cow Beta-carotene status
- Color scores for colostrum:



Source: ANH/NAA, 2015

Survey Results

	Control	Victus Transition
Color	1.6	2.8
BRIX	21.0	27.7
T Pr	6.0	6.9

Conclusion & Benefits

- Herds supplementing Victus Transition:
 - Higher colostrum color score
 - Higher BRIX
 - Higher T Pr in calves receiving colostrum

Colostrum quality responds to supplemental Victus® Transition

Species: Dairy

Country: US

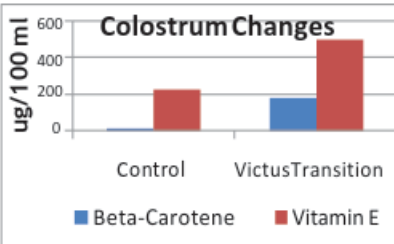
Objectives

- Measure cow and colostrum changes in response to Victus Transition feeding during the closeup period

Trial details

- Commercial dairy, 6000 cows
- Supplemented with 14 gm Victus Transition per hd per day for 21 days pre-calving
- Measured:
 - Blood Beta-carotene status
 - Colostrum Beta-carotene and vitamin E

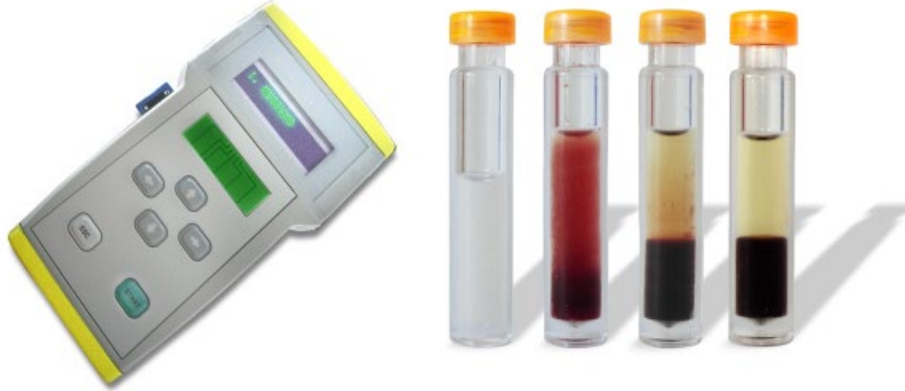
Source: ANH-NAA, 2015



Conclusion & Benefits

- During supplementation, dry cow Beta-carotene status rose from 0.6 ug/ml blood to 2.17 ug/ml
- Colostrum Beta-carotene rose 7X during supplementation
- Colostrum vitamin E rose 2X

Beta-carotene: easy to determine individual status



Page 16

